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U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE

TRANSMITTAL FORM

(to be used for all correspondence after initial filing)

Total Number of Pages in This Submission: 11

Application Number	09/757,856
Filing Date	January 11, 2001
First Named Inventor	Dale C. Flanders
Art Unit	3742
Examiner Name	Jeffery, John A.
Attorney Docket Number	1028.co

ENCLOSURES (Check all that apply)

- [x] Fee Transmittal Form
  - [ ] Fee Attached
- [ ] Amendment/Reply
  - [ ] After Final
  - [ ] Affidavits/declaration(s)
- [ ] Extension of Time Request
- [ ] Express Abandonment Request
- [ ] Information Disclosure Statement
- [ ] Certified Copy of Priority Document(s)
- [ ] Response to Missing Parts/ Incomplete Application
  - [ ] Response to Missing Parts under 37 CFR 1.52 or 1.53
- [ ] Drawing(s)
- [ ] Licensing-related Papers
- [ ] Petition
- [ ] Petition to Convert to a Provisional Application
- [ ] Power of Attorney, Revocation Change of Correspondence Address
- [ ] Terminal Disclaimer
- [ ] Request for Refund
- [ ] CD, Number of CD(s) _____
- [ ] After Allowance Communication to a Technology Center (TC)
- [ ] Appeal Communication to Board of Appeals and Interferences
- [x] Appeal Communication to TC (Appeal Notice, Brief, Reply Brief)
- [ ] Proprietary Information
- [ ] Status Letter
- [ ] Other Enclosure(s) (please Identify below):

Remarks

SIGNATURE OF APPLICANT, ATTORNEY, OR AGENT

Firm or Individual	J. Grant Houston
Signature	
Date	March 8, 2004

CERTIFICATE OF TRANSMISSION/MAILING

I hereby certify that this correspondence is being facsimile transmitted to the USPTO or deposited with the United States Postal Service with sufficient postage as first class mail in an envelope addressed to: Commissioner for Patents, Washington, DC 20231 on this date: March 8, 2004

Typed or printed	Deborah Celeste		
Signature		Date	March 8, 2004

This collection of information is required by 37 CFR 1.5. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 12 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, Washington, DC 20231. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, Washington, DC 20231.**

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PTO/SB/17 (10-03)
Approved for use through 07/31/2006. OMB 0651-0032
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE

FEE TRANSMITTAL for FY 2004

Effective 10/01/2003. Patent fees are subject to annual revision.

☑ Applicant claims small entity status. See 37 CFR 1.27

TOTAL AMOUNT OF PAYMENT ($) 165.00

Complete If Known	
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METHOD OF PAYMENT *(check all that apply)*

☐ Check ☐ Credit card ☐ Money Order ☐ Other ☐ None

☑ Deposit Account:

Deposit Account Number: 501547

Deposit Account Name: AXSUN Technologies, Inc.

The Director is authorized to: *(check all that apply)*

☑ Charge fee(s) indicated below ☑ Credit any overpayments

☑ Charge any additional fee(s) or any underpayment of fee(s)

☐ Charge fee(s) indicated below, **except for the filing fee** to the above-identified deposit account.

FEE CALCULATION

1. BASIC FILING FEE

Large Entity Fee Code	Large Entity Fee ($)	Small Entity Fee Code	Small Entity Fee ($)	Fee Description	Fee Paid
1001	770	2001	385	Utility filing fee	
1002	340	2002	170	Design filing fee	
1003	530	2003	265	Plant filing fee	
1004	770	2004	385	Reissue filing fee	
1005	160	2005	80	Provisional filing fee	

SUBTOTAL (1) ($)

2. EXTRA CLAIM FEES FOR UTILITY AND REISSUE

		Extra Claims		Fee from below	Fee Paid
Total Claims		-20** =		X	=
Independent Claims		- 3** =		X	=
Multiple Dependent					=

Large Entity Fee Code	Large Entity Fee ($)	Small Entity Fee Code	Small Entity Fee ($)	Fee Description
1202	18	2202	9	Claims in excess of 20
1201	86	2201	43	Independent claims in excess of 3
1203	290	2203	145	Multiple dependent claim, if not paid
1204	86	2204	43	** Reissue independent claims over original patent
1205	18	2205	9	** Reissue claims in excess of 20 and over original patent

SUBTOTAL (2) ($) 0

**or number previously paid, if greater; For Reissues, see above

FEE CALCULATION (continued)

3. ADDITIONAL FEES

Large Entity Fee Code	Large Entity Fee ($)	Small Entity Fee Code	Small Entity Fee ($)	Fee Description	Fee Paid
1051	130	2051	65	Surcharge - late filing fee or oath	
1052	50	2052	25	Surcharge - late provisional filing fee or cover sheet	
1053	130	1053	130	Non-English specification	
1812	2,520	1812	2,520	For filing a request for *ex parte* reexamination	
1804	920*	1804	920*	Requesting publication of SIR prior to Examiner action	
1805	1,840*	1805	1,840*	Requesting publication of SIR after Examiner action	
1251	110	2251	55	Extension for reply within first month	
1252	420	2252	210	Extension for reply within second month	
1253	950	2253	475	Extension for reply within third month	
1254	1,480	2254	740	Extension for reply within fourth month	
1255	2,010	2255	1,005	Extension for reply within fifth month	
1401	330	2401	165	Notice of Appeal	
1402	330	2402	165	Filing a brief in support of an appeal	$165.00
1403	290	2403	145	Request for oral hearing	
1451	1,510	1451	1,510	Petition to institute a public use proceeding	
1452	110	2452	55	Petition to revive - unavoidable	
1453	1,330	2453	665	Petition to revive - unintentional	
1501	1,330	2501	665	Utility issue fee (or reissue)	
1502	480	2502	240	Design issue fee	
1503	640	2503	320	Plant issue fee	
1460	130	1460	130	Petitions to the Commissioner	
1807	50	1807	50	Processing fee under 37 CFR 1.17(q)	
1806	180	1806	180	Submission of Information Disclosure Stmt	
8021	40	8021	40	Recording each patent assignment per property (times number of properties)	
1809	770	2809	385	Filing a submission after final rejection (37 CFR 1.129(a))	
1810	770	2810	385	For each additional invention to be examined (37 CFR 1.129(b))	
1801	770	2801	385	Request for Continued Examination (RCE)	
1802	900	1802	900	Request for expedited examination of a design application	

Other fee (specify) _____

*Reduced by Basic Filing Fee Paid

SUBTOTAL (3) ($) 165.00

SUBMITTED BY				(Complete *(if applicable)*)	
Name (Print/Type)	J. Grant Houston	*Registration No. (Attorney/Agent)*	35,900	*Telephone*	978-439-3479
Signature				*Date*	March 8, 2004

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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In Re:	Dale C. Flanders, *et al.*		
Serial No:	09/757,856	Group:	3742
Filed:	January 11, 2001	Examiner:	Jeffery, John A.
For:	Method and System for Feedback Control of Optical Fiber Lens Fusing	Confirmation No:	8212

Date: March 8, 2004

APPELLANTS' BRIEF

VIA FACSIMILE: **703-872-9306**

Mail Stop Appeal Brief- Patents
Commissioner for Patents
P.O. Box 1450,
Alexandria, Virginia 22313-1450

Sir:

This is the Applicants' appeal from the Office Action, mailed July 9, 2003 (Paper No. 13).

For the purposes of determining the timeliness of this appeal, it should be noted that, although the Office Action Summary page of the July 9th Office Action identifies the Action as both "Final" and "non-Final", the subsequent Advisory Action, mailed December 30, 2003, reclassifies the status of that earlier Action as simply being "Final". Thus, Applicants believe that this appeal should be deemed timely.

Real Party of Interest

Axsun Technologies, Inc. is the real party in interest.

Related Appeals and Interferences

There are no related appeals or interferences.

Status of Claims

Claims 1-12 and 14-17 are pending in this application. Claims 1-12 and 14-17 stand finally rejected pursuant to the outstanding Office Action.

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Docket: 1028.co

Status of Amendments

All Amendments have been entered.

Summary of the Invention

The present invention concerns a system, and associated method, for fusing an optical fiber lens.

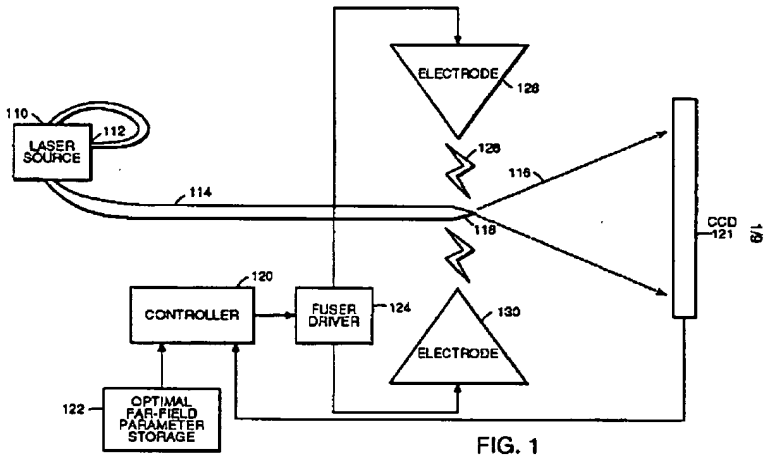

FIG. 1

The system is compatible with automation. Specifically, the fusing of the fiber lens 118 is controlled in response to a diffraction pattern of light exiting from the fiber lens and detected by CCD 121. The pattern is then analyzed by controller 120.

This detected diffraction pattern is indicative of the lens shape and characteristics and can be compared to optimal pattern characteristics that can be accessed from the storage 122.

An exemplary polished wedged shaped lens is shown below:

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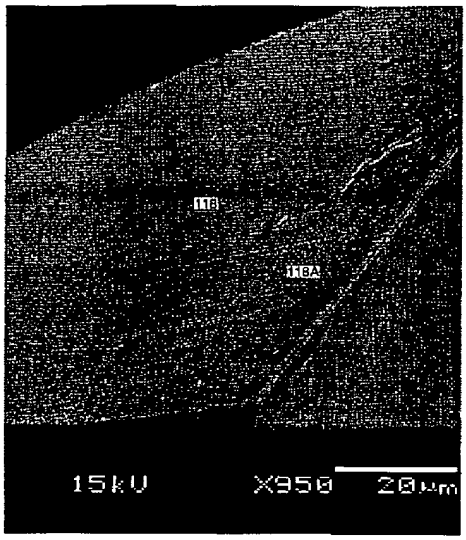
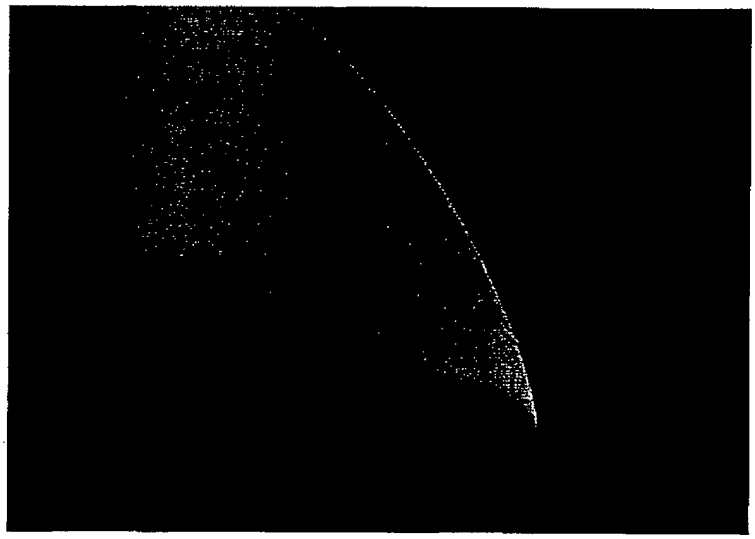


FIG. 2

This polished wedge shaped lenses is processed to yield an exemplary optimal wedge-shaped lens after fusing by the inventive system, as shown below:



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Issues

1. Whether Claims 1-5, 7-11, and 16 are obvious over Honmou (US 5,563,969) in view of Irie, *et al.* (US 6,301,406).
2. Whether Claims 6, 12, 14, 15, and 17 are obvious over the Honmou Patent in view of Irie, *et al.* Patent, in further view of Fanning (US 4758386).

Grouping of Claims

The claims 1-4 and 8-12, stand or fall together. The remaining claims stand or fall individually from each other.

Argument

Claim 1 is directed to a method for fusing an optical fiber lens. The method comprises injecting light into an optical fiber having a wedge-shaped fiber lens formed by polishing at a proximal end of the optical fiber, detecting a diffraction pattern of the light exiting from the fiber lens, and electro-fusing the fiber lens in response to a two-dimensional distribution of the diffraction pattern.

In a similar vein claim 8 is directed to a corresponding "system".

Neither the Honmou patent nor the Irie, *et al.* patent shows or suggests the step of electro-fusing the fiber lens in response to a two-dimensional distribution of the diffraction pattern. The most relevant portion from the patents is found in the Honmou patent, which teaches that the fusing should be performed in response to the diameter.

In fact, the Final/non-Final Office Action admits that the claims "differ from the.. cited prior art in calling for the controller to determine a ratio of lateral size to transverse size of the diffraction pattern."

To address this deficiency in the references, the Final/non-Final Office Action argues that there is no criticality in the ratio of sizes, for example, being a mere engineering design preference.

There is no evidence to support this contention that the fusing in response to the two-dimensional pattern is a mere design preference. In fact, the most relevant evidence of record is Applicants' application, which includes actual data showing the required number of fusing, and improvements derived from fusing, and far field images showing the resulting improvements. In short, the Applicants demonstrated that there is criticality in the "ratio of sizes", since it is the foundation for the performance gains described by Applicants.

In a similar vein, claim 16 requires the electro-fusing of the fiber lens in response to the aspect ratio of the diffraction pattern by exposing the fiber lens to an electrical arc until an optimal aspect ratio is detected. None of the applied references shows or suggests aspect ratio detection and/or arc exposure until an optimal aspect ratio is detected.

Claim 5 further specifies the step of analyzing a two-dimensional distribution of the diffraction pattern. Again, the Honmou, only teaches diameter detection.

Finally, claims 6 and 14 require determining a ratio of a lateral size to a transverse size of the diffraction pattern, which is also not shown.

While admitting that determining a ratio of a lateral size to a transverse size, for example, is not shown by the applied references, the Office Action argues that this is mere "optimum or workable ranges." This analogy is not apt. The Applicants are proposing an entirely new measurement processing solution, involving the measurement of characteristics, not appreciated by the applied references, and control in response to those characteristics. These are not mere workable ranges as argued in the Office Action.

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For the foregoing reasons, Applicants believe that the pending rejections should be withdrawn, and that the present application should be passed to issue. Should any questions arise, please contact the undersigned.

Respectfully submitted,

By _____
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Registration No.: 35,900
Axsun Technologies, Inc.
Tel.: 978-439-3479
Fax: 978-262-0035

Billerica, MA 01821
Date: 3/8/04

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Appendix

1. (previously presented) A method for fusing an optical fiber lens, comprising:
injecting light into an optical fiber having a wedge-shaped fiber lens formed by polishing at a proximal end of the optical fiber;
detecting a diffraction pattern of the light exiting from the fiber lens; and
electro-fusing the fiber lens in response to a two-dimensional distribution of the diffraction pattern.

2. (previously presented) A method as claimed in claim 1, wherein the step of injecting the light into the optical fiber comprises energizing a laser that is coupled to a distal end of the optical fiber.

3. (original) A method as claimed in claim 1, wherein the step of detecting the diffraction pattern comprises detecting a far-field diffraction pattern.

4. (original) A method as claimed in claim 1, wherein the step of detecting the diffraction pattern comprises positioning a two-dimensional detector optically in front of the fiber lens.

5. (original) A method as claimed in claim 1, further comprising analyzing a two-dimensional distribution of the diffraction pattern.

6. (original) A method as claimed in claim 5, wherein the step of analyzing the diffraction pattern comprised determining a ratio of a lateral size to a transverse size of the diffraction pattern.

7. (original) A method as claimed in claim 1, wherein the step of fusing the fiber lens comprises exposing the fiber lens to an electrical arc.

8. (previously presented) A system for fusing an optical fiber lens, comprising:
a light source that injects light into an optical fiber;

a detector that detects a two-dimensional distribution of a diffraction pattern of the light exiting from a fiber lens at a proximal end of the optical fiber, the fiber lens being wedge-shaped and having been formed by polishing;

an arc fuser that fuses the fiber lens; and

a controller that activates the arc fuser in response to the two-dimensional distribution of the diffraction pattern detected by the detector.

9. (original) A system as claimed in claim 8, wherein the light source comprises a laser that is coupled to a distal end of the optical fiber.

10. (previously presented) A system as claimed in claim 8, wherein the detector is positioned relative to the fiber lens to detect a far-field diffraction pattern.

11. (original) A system as claimed in claim 8, wherein the detector is positioned greater than 0.5 centimeters from the fiber lens.

12. (original) A system as claimed in claim 8, wherein detector comprises a camera.

13. (cancelled)

14. (original) A system as claimed in claim 8, wherein the controller determines a ratio of a lateral size to a transverse size of the diffraction pattern.

15. (original) A system as claimed in claim 8, wherein the controller activates the arc fuser in a pulsed fashion until a desired diffraction pattern is detected by the detector.

16. (previously presented) A method for fusing an optical fiber lens, comprising:

injecting light into an optical fiber having a wedge-shaped fiber lens formed by polishing at a proximal end of the optical fiber;

detecting an aspect ratio of a diffraction pattern of the light exiting from the fiber lens by positioning a two-dimensional detector optically in front of the fiber lens; and

electro-fusing the fiber lens in response to the aspect ratio of the diffraction pattern by exposing the fiber lens to an electrical arc until an optimal aspect ratio is detected.

17. (previously presented) A method as claimed in claim 16, wherein the step of electro-fusing the fiber lens by exposing the fiber lens to the electrical arc comprises exposing the fiber lens to electrical arc pulses.